

VI-200

DC-DC Converters 50 to 200 Watts

Converter Selection Chart

VI-2 • • • •

Features

- Up to 50W/Cubic Inch
- UL, CSA, TÜV, VDE, BABT, AUSTEL
- Up to 90% Efficiency
- Size: 4.6" x 2.4" x 0.5" (116.8 x 61.0 x 12.7)
- Remote Sense and Current Limit
- OVP, Thermal Shutdown
- Logic Disable
- Wide Range Output Adjust
- Compatible Power Booster Modules
- ZCS Power Architecture
- Low Noise FM Control
- CE Marked

Product Highlights

The VI-200 Family, with over 8 million shipped, is Vicor's first generation of "zero-current-switching" component-level DC-DC converters.

Operating at frequencies up to 2 MHz, VI-200 Family Converters offer exceptional power density, efficiency, noise performance, reliability and ease of use. Power Boosters provide a simple, cost effective, off-the-shelf solution for higher power output requirements. One or more boosters may be used to create synchronous arrays capable of supplying several kilowatts of output power.

The flexibility of Vicor's power components is also available in half-size, half-power VI-J00 MiniMods. (pg. 72)

Packaging Options

SlimMod™, high power density, flangeless packages and FinMod™, featuring integral finned heatsinks.

SlimMod: Option suffix: **-S**

Example: VI - 2XX - XX - **S**

FinMod: Option suffix: **-F1** and **-F2**

Examples:

VI - 2XX - XX - **F1**, 0.75" height

VI - 2XX - XX - **F2**, 1.00" height

• Nominal	Input Voltage Range	Brownout/Transient*	• Output Voltage
0 = 12V	10 - 20V (1)	n/a	Z = 2V 2 = 15V
1 = 24V	21 - 32V (4)	18V	Y = 3.3V N = 18.5V
W = 24V	18 - 36V (2)	n/a	O = 5V 3 = 24V
2 = 36V	21 - 56V (3)	18V	X = 5.2V L = 28V
3 = 48V	42 - 60V (4)	36V	W = 5.5V J = 36V
N = 48V	36 - 76V (4)	n/a	V = 5.8V K = 40V
4 = 72V	55 - 100V (4)	45V	T = 6.5V 4 = 48V
T = 110V	66 - 160V (2)	n/a	R = 7.5V H = 52V
5 = 150V	100 - 200V (5)	85V	M = 10V F = 72V
6 = 300V	200 - 400V (4)	170V	1 = 12V D = 85V
7 = 150/300V	100 - 375V (6)	425V	P = 13.8V B = 95V
		90V	n/a

• Product Grade/ Operating Temp.	Product Grade/ Storage Temp.	Output Power/Current
E = -10°C to +85°C	E = -20°C to +100°C	V _{OUT} ≥ 5V
C = -25°C to +85°C	C = -40°C to +100°C	V _{OUT} < 5V
I = -40°C to +85°C	I = -55°C to +100°C	Y = 50W Y = 10A
M = -55°C to +85°C	M = -65°C to +100°C	X = 75W X = 15A
		W = 100W W = 20A
		V = 150W V = 30A
		U = 200W U = 40A

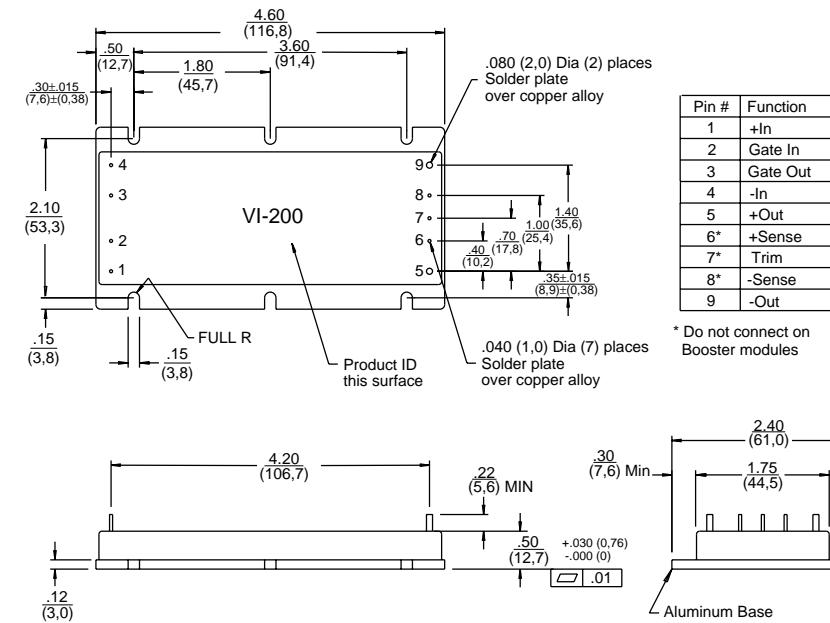
Overtemperature shutdown 95°C typical
(recycle power to restart).

For additional output power use "Boosters".
Change (VI-2xx-xx) to (VI-Bxx-xx).

Max. Output For	5V Outputs	> 5V Outputs	< 5V Outputs	Max. Output For	5V Outputs	> 5V Outputs	< 5V Outputs
(1)	75W	75W	15A	(4)	200W	200W	40A
(2)	150W	150W	30A	(5)	150W	200W	40A
(3)	100W	100W	20A	(6)	75W	100W	20A

* Brownout 75% of rated load: transient voltage for 1 second.

Mechanical Drawing





Converter Specifications

(typical at $T_{BP} = 25^\circ\text{C}$, nominal line and 75% load, unless otherwise specified)

PARAMETER	VI-200 E-Grade			VI-200 C-, I-, M-Grade			TEST CONDITIONS
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.	UNITS
■ Input Characteristics							
Inrush charge	120x10 ⁻⁶			120x10 ⁻⁶	200x10 ⁻⁶	Coulombs	Nominal line
Input reflected ripple current - pp	10%			10%		I _{IN}	Nominal line, full load
Input ripple rejection	25+20Log($\frac{V_{in}}{V_{out}}$)			30+20Log($\frac{V_{in}}{V_{out}}$)		dB	120 Hz, nominal line
				20+20Log($\frac{V_{in}}{V_{out}}$)		dB	2400 Hz, nominal line
No load power dissipation	1.35	2		1.35	2		Watts
■ Output Characteristics							
Setpoint accuracy	1%	2%		0.5%	1%	V _{NOM}	
Load/line regulation	0.5%			0.05%	0.2%	V _{NOM}	LL to HL, 10% to Full Load
Load/line regulation	1%			0.2%	0.5%	V _{NOM}	LL to HL, No Load to 10%
Output temperature drift	0.02			0.01	0.02	% / °C	Over rated temp.
Long term drift	0.02			0.02		%/1K hours	
Output ripple - pp:							
2V, 3.3V		150 mV		60 mV	100 mV		20 MHz bandwidth
5V		5%		2%	3%		20 MHz bandwidth
10-48V		3%		0.75%	1.5%		20 MHz bandwidth
Trim range ¹	50%	110%	50%	110%			
Total remote sense compensation	0.5		0.5			Volts	0.25V max. neg. leg
OVP set point	125% ²		115%	125% ²	135%	V _{NOM}	Recycle power
Current limit	105%	135%	105%	125%		I _{NOM}	Automatic restart
Short circuit current ³	20%	140%	20%	130%		I _{NOM}	
■ Control Pin Characteristics							
Gate out impedance	50		50			Ohms	
Gate in impedance	10 ³		10 ³			Ohms	
Gate in open circuit voltage	6		6			Volts	Use open collector
Gate in low threshold	0.65		0.65			Volts	
Gate in low current	6		6			mA	
Power sharing accuracy	0.95	1.05	0.95	1.05			
■ Dielectric Withstand Characteristics							
Input to output	3,000		3,000			V _{RMS}	Baseplate earthed
Output to baseplate	500		500			V _{RMS}	
Input to baseplate	1,500		1,500			V _{RMS}	
■ Thermal Characteristics							
Efficiency	78-88%		80-90%				
Baseplate to sink	0.2		0.2			°C/Watt	With Vicor P/N 01777
Thermal shutdown ⁴ (Drivers only)	90	95	105	90	95	105	°C
							Cool and recycle power to restart
■ Mechanical Specifications							
Weight	6.0 (170)		6.0 (170)			Ounces (Grams)	

¹ 10V, 12V and 15V outputs, standard trim range ±10%. Consult factory for wider trim range.

² 131% nominal for booster modules.

³ Output voltages of 3.3V or 5V incorporate foldback current limiting; all other outputs provide constant current limiting.

⁴ No overtemp protection in booster modules.